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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/550,591

09/13/2006

Dong-seok Kim

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EXAMINER

LISTVOYB, GREGORY

ART UNIT

PAPER NUMBER

1765

MAIL DATE

DELIVERY MODE

12/30/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/550,591	Applicant(s) KIM ET AL.	
	Examiner GREGORY LISTVOYB	Art Unit 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-17 is/are pending in the application.
- 4a) Of the above claim(s) 4-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al (US 2002/0055610) herein Okada (cited in the previous Office Action) in view of Haehne et al (US 5474876) herein Haehne as evidences by Berrada, M. et al., "Novel Negative-Type Soluble Photosensitive Polyimides: Synthesis and Characterization", Chem., vol. 8, No. 5 (1996), pp. 1029-1034., herein Berrada (cited in the previous Office Action).

Okada discloses a reactive transparent polyimide precursor and polyimide comprising a reaction product of alicyclic tetracarboxylic acid dianhydride (1,2,3,4 cyclobutanetetracarboxylic acid dianhydride, ((see line 0139), which is the same compound used in the Application) and the diamine, having ethylenically unsaturated side chain (the same diaminophenyl cinnamate used in the application, see line 0150).

In reference to Claim 3, Okada teaches that Molecular Weight of the polyamide precursor is within the range of 5000-1000000 (see line 0136).

Note that Okada does not teach Negative-Type Soluble Photosensitive Polyimides.

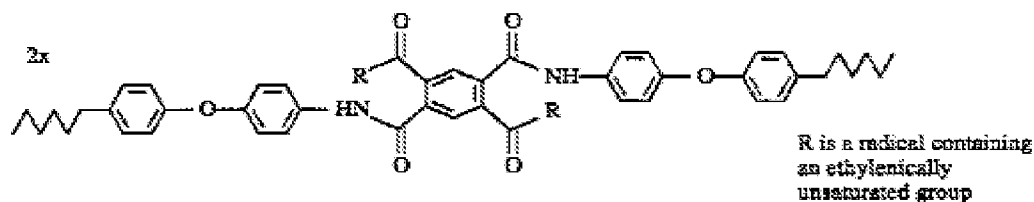
As evidences by Berrada, Negative-Type Soluble Photosensitive Polyimides, having cinnamoyl, acryloyl or methacryloyl fragments in the polyimide precursor (see page 1031) need much lower temperature and shorter time of heat treatment compare to conventional materials, resulting in a low shrinkage of the film thickness.

Therefore, it would have been obvious to a person of ordinary skills in the art to use Okada's polyimide as Negative-Type Soluble Photosensitive material, since it requires much lower temperature and shorter time of heat treatment compare to conventional materials, resulting in a low shrinkage of the film thickness.

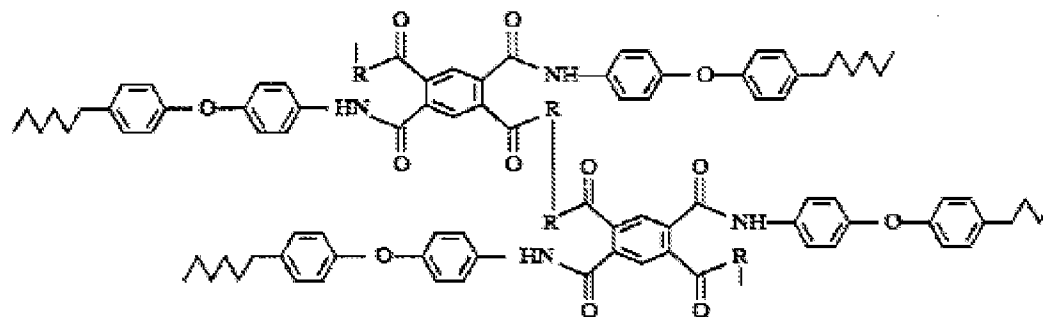
Okada does not teach partially esterified polyamic acid.

Haehne teaches negative polyimide precursor composition (see Abstract, Column 1, line 25), having following formulas:

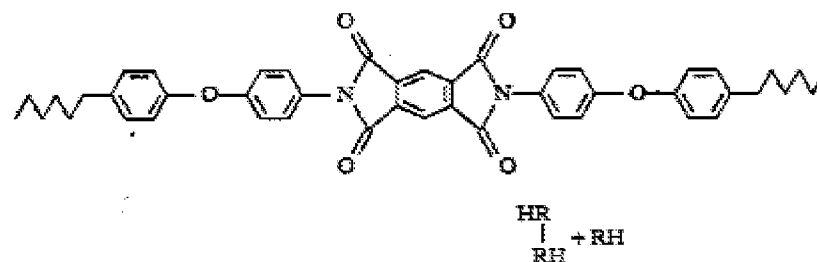
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Radiation-sensitive precursor A



Radiation-crosslinked intermediate B



Where R can represent allyl alcohol derivative (see Column 3, line 25)

Thus, esterified and neat polyamic acid can be used interchangeably. In addition, partial esterification of polyamic acid makes material more hydrophobic, increasing its solubility in organic solvents.

The selection of a known material based on its suitability for its intended use supported a *prima facie* obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*,

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325 U.S. 327, 65 USPQ 297 (1945) , 325 U.S. at 335, 65 USPQ at 301, see also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960), *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) and MPEP 2144.07.

Therefore, it would have been obvious to a person of ordinary skills in the art to use partially esterified polyamic acid, since it is a known material based on its suitability for its intended use.

Regarding acid values within the range of 30-200 mg/KOH, the position is taken that since Okada's precursor, modified with Haehne, has the same structure as one of the Application examined, all their physical properties are expected to be identical.

Response to Arguments

Applicant's arguments with respect to claims 1 and 3 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY LISTVOYB whose telephone number is (571)272-6105. The examiner can normally be reached on 10am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GL
/GREGORY LISTVOYB/
Examiner, Art Unit 1765